

The Claims

1. An ultrasonic dental instrument grippable by an operator comprising:
a handpiece; and
an ultrasonic insert with a treatment applying tip, wherein the insert is carried by the
handpiece, and, wherein the tip is rotatable relative to the handpiece by a force
applied only to a portion of the insert wherein the insert includes a torque lock with
a plurality of radially movable prongs..
2. An instrument as in claim 1 wherein the insert is releasibly coupled
for axial insertion into and removal from the handpiece.
3. An instrument as in claim 2 wherein the insert carries a user
comfortable, deformable, elastomeric member whereby the user can rotate the tip
relative to the handpiece.
4. An instrument as in claim 3 wherein the insert includes an elongated
body with an end coupled to the tip and a torque transferring cylinder coupled
between a portion of body and the elastomeric member whereby the cylinder is
mechanically locked to the body by the torque lock such that a rotary force applied
to the elastomeric member establishes a torque for rotating the body.
5. An instrument as in claim 4 wherein the cylinder is coupled to the
body at a region of minimal axial ultrasonic vibration.
6. An instrument as in claim 4 which includes a cylindrical bearing
which is slidably locked to the handpiece in which the torque transferring cylinder
rotates.
7. An instrument as in claim 3 which includes a rotary bearing
positioned adjacent to the elastomeric member whereby the tip and the elastomeric
member are rotatably decoupled from and are rotatable together relative to the
handpiece.
8. An instrument as in claim 7 wherein the bearing is located at least in
part, adjacent to a region of minimal axial ultrasonic vibration.
9. An instrument as in claim 3 wherein the tip is rotatable through an
arc on the order of at least two hundred seventy degrees.

10. An instrument as in claim 3 wherein the elastomeric member comprises silicone.

11. An instrument as in claim 1 wherein the insert carries a user gripping member for rotating the tip.

5 12. An instrument as in claim 1 which includes a rotary bearing positioned adjacent to an elastomeric member whereby the tip and the elastomeric member are rotatable together relative to the handpiece.

13. An instrument as in claim 12 wherein the bearing has an end located adjacent to a region of minimal axial ultrasonic vibration of the insert.

10 14. An instrument as in claim 1 wherein the tip is rotatable through an arc on the order of at least two hundred seventy degrees.

15 15. An instrument as in claim 1 which includes an elastomeric handle wherein the elastomeric handle comprises silicone.

16 16. An instrument as in claim 1 which includes:
a hollow, generally cylindrical bearing member rotatably latched to the insert wherein the cylindrical bearing member slidably engages the handpiece.

17. An instrument as in claim 16 which includes a deformable gripping handle locked to the insert.

20 18. An instrument as in claim 16 wherein the insert defines a slot thereon and wherein the cylindrical bearing member is located adjacent to the slot with the torque lock located therebetween..

19. An instrument as in claim 18 which carries a cylindrical user handle, deformable at least in part, wherein an end of the handle is adjacent to an end of the cylindrical bearing member.

25 20. An instrument as in claim 18 wherein the slot is located on the insert at a region of minimal axial ultrasonic vibration.

21. An instrument as in claim 20 which carries a cylindrical user handle wherein a portion of the torque lock lockingly engages the slot and wherein the bearing member is thereby blocked from axial movement relative to the insert.

30 22. An instrument as in claim 21 wherein a portion of the handpiece slidably engages the bearing member.

23. An instrument as in claim 17 wherein the grippable member is carried by an element which slidably engages a region of the insert exhibiting minimal vibration.

5 24. An instrument as in claim 23 wherein the element has first and second sections wherein one section lockingly engages a slot in the minimal vibration region of the body.

25. An instrument as in claim 24 wherein the second section engages the first section with an interference fit.

10 26. An instrument as in claim 25 wherein the second section has a cylindrical external periphery and carries the deformable gripping handle thereon.

27. A method of assembling an ultrasonic insert comprising:

providing a body portion having a proximal end and a distal end wherein the distal end carries an operating member, the proximal end carries a transducer;

15 sliding a rotary bearing member over and past the operating member to a location, at least in part, in the vicinity of the proximal end;

sliding a locking member over and past the operating member toward the bearing member and clamping the locking member to the body portion at a region of minimal axial ultrasonically induced vibration thereby blocking axial
20 movement of the bearing member along the body;

sliding a handle over and past the operating member and coupling the handle to the locking member whereby the handle is blocked from any axial movement relative to the body.

25 28. A method as in claim 27 which includes, in the clamping step, positioning the locating member to, at least in part, slidably engage a slot on the body.